DOCUMENT RESUME

ED 193 283 TM 800 598

AUTHOR Townsend, Michael A. R.; Mahoney, Peggy
TITLE Humor and Anxiety: Effects on Class Test Performance.
PUB DATE Apr 80
NOTE 23p.; Paper presented at the Annual Meeting of the American Educational Research Association (64th, Boston, MA, April 7-11, 1980).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Tests; Anxiety; Higher Education; *Humor; Scores; *Test Anxiety; *Testing Problems; *Test Items
IDENTIFIERS State Trait Anxiety Inventory (Spielberger)

ABSTRACT

The roles of humor and anxiety in test performance were investigated. Measures of trait anxiety, state anxiety and achievement were obtained on a sample of undergraduate students; the A-Trait and A-State scales of the State-Trait Anxiety Inventory were used. Half of the students received additional humorous items in the achievement test. The purpose of the study was to examine the assumption that the introduction of humor into the academic test situation would facilitate achievement test performance for highly anxious students. Results of the study did not support this thesis; this finding conflicts with two previous investigations of the interaction of humor and anxiety in test performance. The major difference between the studies involves the method of humor presentation. The inclusion of humorous items as a pedagogical device may, however, be detrimental to high anxiety students, who displayed lower achievement than the low anxiety students on the humorous version of the test. (Author/GK)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED193283

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Humor and Anxiety: Effects on Class Test Performance

Michael A.R. Townsend

State University of New York at Albany

and

Peggy Mahoney

Junior College of Albany

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
M. Townsend

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

TM 800598

Paper presented at the American Educational Research Association annual meeting, April 1980, Boston, Massachusetts

Abstract

Measures of trait anxiety, state anxiety and achievement were obtained on a sample of undergraduate students, half of whom received additional humorous items in the achievement test. In a regression analysis, the trait anxiety x test version interaction was a significant predictor of achievement. Subsequent analyses revealed a disordinal interaction in which highly anxious students had lower achievement on the humorous test than the nonhumorous test, and students with low anxiety and higher achievement on the humorous test than students with high anxiety. The results do not support the popular assumption that humor is a positive factor in reducing high anxiety associated with academic evaluations.

Humor is generally unquestioned as a useful aid in the learning process. Exemplifying the comments of Ball and Bogatz (1971) and Earls (1972) about its facilitative instructional effects, humor has been systematically incorporated both in specific teaching methods (e.g., Davis, 1976) and in the writing of textbooks (e.g., Le Francois, 1973). Furthermore, the belief in the positive effects of humor in evaluation settings has even prompted authors to construct humorous test items to accompany their textbooks (e.g., Brophy, 1977). This popular acceptance of the benefits of humor is not based on empirical research. In their impressive review, Goldstein and McGhee (1972) emphasized the lack of research on humor generally, while Ziv (1976) drew attention to the paucity of research on the effects of humor in educational settings. This lack of research may be partially explained in Terry and Woods' (1975) suggestion that it may be an act of heresy to question the instructional benefits of humor. However, heresy aside, several recent studies have challenged some of the popular assumptions concerning humor in education (Hedl, Hedl and Weaver, 1978, Note 1; Hauck and Thomas, 1972; Terry and Woods, 1975).

The interjection of humor into the educational setting is supported by a history of psychological treatises that have argued that humor serves as a basic mechanism in reducing anxiety (Freud, 1928; Keith-Spiegel, 1972; Spencer, 1860). This effect has particularly important consequences for educational evaluation where anxiety is known to influence achievement (King, Heinrich, Stephenson and Spielberger, 1976). Most notably, poor achievement performance is associated with high

levels of anxiety (Hill, 1972; Hill and Sarason, 1966). In brief, humor is presumed to be effective in lowering high states of affective arousal to more moderate levels which facilitate cognitive functioning.

Two noteworthy attempts have been made to investigate the effects of humor on the academic test performance of students differing in level of anxiety. Smith, Ascough, Ettinger, and Nelson (1971) found that highly anxious undergraduate students scored significantly higher on a 30-item multiple choice course examination containing ten items written in a humorous style than on a test containing matched nonhumorous items. Students of low anxiety performed at a high level regardless of whether they received a humorous or nonhumorous test. The authors argued that high anxiety was inhibited in the humorous version of the test and therefore did not exert its usual detrimental effect. One problem with the study is in knowing whether the two "matched" versions of the test were indeed equivalent forms. More recently, Terry and Woods (1975) administered matched humorous and nonhumorous versions of mathematical and verbal tests to third and fifth grade students. The humorous test resulted in depressed mathematical performance for the third grade children, but no change in their verbal performance. The humorous test had no effect on the mathematical performance of the fifth grade children, but was associated with increased achievement on the first verbal test and decreased achievement on the second. The third grade children were assumed to be less anxious than the fifth grade children since the importance of educational evaluations increases with grade. The authors suggested that humor reduced the anxiety of the third grade

children already low in anxiety below an optimal level of arousal, resulting in poorer performance. For the more anxious fifth grade children, humor reduced anxiety towards an optimal level at first and then, through overexposure, further reduced anxiety below a level optimal for test performance. As with the Smith et al. (1971) study, there is the problem of the equivalence of the "matched" humorous and nonhumorous test versions. In addition, and perhaps more importantly, the arguments concerning the interaction of humor and anxiety are questionable without actual anxiety data. In both articles, however, the authors support the notion that humor serves to reduce the level of anxiety of highly anxious students towards a level of arousal which optimizes their test performance.

In contrast with the results of the studies just mentioned, there is recent evidence (Hedl, Hedl, & Weaver, Note 1) that highly anxious university students appreciate humor less under achievement oriented conditions than under non-stressful conditions. This trend reverses for students who have low anxiety. Additionally, humor may serve to increase tension for people who are already highly anxious (Levine and Abelson, 1959). The implication of this is that the introduction of humor into a stressful evaluation situation may <u>increase</u> the anxiety of highly anxious students and further reduce their already impaired performance.

The current study investigated the roles of humor and anxiety in test performance. In order to avoid the problem in the Smith et al. (1971) and Terry and Woods (1975) studies of the equivalence of the

humorous and non-humorous achievement tests, the achievement scores for all subjects in this study were based on regular test items. The primary purpose of the study was to examine the assumption that the introduction of humor into the academic test situation will facilitate achievement test performance for highly anxious students.

Method

Subjects. One hundred and six undergraduate students enrolled in two sections of a Child Development course (n = 50) and two sections of an Introductory Psychology course (n = 56) at a two year junior university participated in this study. There were 28 males and 78 females in the sample. All four course sections were taught by the second author.

Trait and State Anxiety. Two measures of anxiety were obtained using the 20-item self report scales of trait anxiety (A-Trait) and state anxiety (A-State) of the State-Trait Anxiety Inventory (Spielberger, Gorsuch and Lushene, 1970). The A-Trait scale is appropriate as a means of selecting people who vary in their proneness to anxiety in stressful situations. The test manual cites test-retest reliability coefficients for the scale ranging from .73 to .86, and concurrent validity coefficients of .75 and .80 with the IPAT Anxiety Scale (Cattell and Sheier, 1963) and Taylor's (1953) Manifest Anxiety Scale respectively. The A-State scale is appropriate as a measure of transitory anxiety which may vary in intensity and fluctuate over time. The scale has high internal consistency and discriminates between conditions which are characterized by different degrees of stress (Spielberger, et al., 1970).

Humorous Items. The authors initially constructed a pool of 13 humorous items similar in appearance to the test items (i.e. a stem of several lines and four alternative answers). An example of such an item is:

> A world-famous violinist allows you, his dinner host, to hold his Stradivarius. While examining the fine wood your cigarette falls through one of the sound holes into the interior of the violin. You should:
>
> (a) Hand the violin to one of the other guests
>
> (b) Turn the violin upside down and shake it
>
> (c) Pry the back open just far enough to let the cigarette drop out
>
> (d) Pour a glass of wine into the violin

Thirty-three graduate students in a developmental psychology course read the thirteen items in one of six different random orders (to control for order effects in the humor judgements, cf. Goldstein, Suls, and Anthony, 1972). Each student then rank ordered the items according to the perceived humorousness of each. The five items receiving the highest mean rankings were selected for this study. As an additional check on the validity of the humor of the items 14 psychology students at the junior college not in the experiment rated the humorousness of the items on a 7-point scale (1 = not at all funny, 7 = extremely funny). The mean rating for the five items was 4.26, indicating that the items selected for the experiment were moderately funny. In testing completed prior to this research it had been found that the addition of five humorous items to a test of comparable length did not significantly

increase the amount of time taken to complete the test.

Class Tests. Class tests were constructed for the Child Development and Introductory Psychology courses. Each test contained 35 multiple choice items testing material relevant to the course. The nonhumorous versions contained only the 35 test items. The humorous test versions were constructed by inserting the five humorous items into the normal test after the 3rd, 10th, 18th, 25th, and 32nd items. The order of humorous items was the same for all students receiving the humorous versions of the test. Instructions for the test were the same for all students and no reference was made to the humorous insertions. The tests were untimed and taken under normal classroom examination conditions. Subsequent analyses of the achievement scores, separated by course and test version, revealed internal consistency reliability coefficients ranging from .70 to .85 with a mean coefficient of .78 for the four tests.

Procedure. During the third week of the fall semester the 20-item trait anxiety scale of the State-Trait Anxiety Inventory was administered to all students enrolled in the two courses. Anxiety scores were first subjected to a 4 (class section) x 2 (sex) factorial analysis of variance. The main effect for sex was significant, with females (Mean = 41.62, SD = 8.26) scoring higher than males (Mean = 37.29, SD = 7.82), $F(1, 98) = 5.81$, $p < .05$. However, no significant differences were found among the mean anxiety scores of the four class sections in the two courses, $F(3, 98) = 0.86$, $p > .05$. The interaction of class section and sex also failed to reach significance, $F(3, 98) = 0.54$, $p > .05$.

A similar 2 (course) x 2 (sex) analysis of variance further revealed no significant effect due to course, $F(1, 102) = 0.61$, $p > .05$, or its interaction with sex, $F(1, 102) = 0.09$, $p > .05$. The means and standard deviations for this analysis are shown in Table 1. Anxiety scores were rank ordered for each sex within each of the two courses. Adjacent scores were then paired together and pair members were randomly assigned to the humorous and nonhumorous test versions which were administered during the sixth week of the semester.

Insert Table 1 here

Immediately prior to receiving the achievement test, all students completed the A-State anxiety scale. Again, a 4 (class section) x 2 (sex) analysis of variance failed to indicate any significant differences between class sections $F(3, 98) = 1.40$, $p > .05$, or their interaction with sex, $F(3, 98) = 1.79$, $p > .05$. The main effect for sex was significant, $F(1, 98) = 7.27$, $p < .01$, with females having higher state anxiety than males. In a further 2 (course) x 2 (sex) analysis of variance, the main effect for course did not reach significance, $F(1, 102) = 3.06$, $p > .05$, nor did its interaction with sex, $F(1, 102) = 3.71$, $p > .05$. The significant sex effect, $F(1, 102) = 7.18$, $p < .01$ can be seen in Table 1.

Results

The achievement data were first analyzed in a 4(class section) x 2 (sex) analysis of variance. No significant differences in achievement were found among the four class sections of the Child Development (Section A Mean = 20.84, SD = 5.99; Section B Mean = 20.63, SD = 5.90) and Introductory Psychology (Section A Mean = 20.65, SD = 5.28; Section

B Mean = 20.47, SD = 4.49) courses, $F(3,98) = .02$, $p > .05$. The mean achievement score for males (Mean = 20.07, SD = 4.97) was not significantly different from females (Mean = 20.88, SD = 5.57), $F(1, 98) = .80$, $p > .05$. The interaction effect was also not significant, $F(1, 98) = .68$, $p > .05$. Similarly, no significant effects were found when the achievement scores were analyzed in a 2 (course) x 2 (sex) analysis of variance, with the mean achievement scores for the Child Development (Mean = 20.76, SD = 5.90) and Introductory Psychology (Mean = 20.59, SD = 4.98) courses not being significantly different, $F(1, 102) = .01$, $p > .05$.

Although the content of the achievement tests was different for the two courses, the statistical characteristics of the tests were very similar. In view of these similarities, together with the homogeneity of the groups on the anxiety measures and the lack of interaction among the measures, the achievement data for the two courses were pooled in the following analyses.

A multiple regression analysis was performed with achievement as the dependent variable and test version (humorous, nonhumorous), trait anxiety, state anxiety, and the trait anxiety x test version and state anxiety x test version interactions as independent variables. The full model equation was significant, $F(5, 100) = 3.04$, $p < .05$, accounting for 13.2 percent of the variance. As shown in Table 2, test version, trait anxiety, and the test version x trait anxiety interaction were statistically significant predictors of achievement.

Insert Table 2 here

The nature of the significant test version x trait anxiety interaction was clarified in a subsequent analysis. The trait anxiety scores were classified as low (Range = 22 to 36), medium (Range = 37 to 43) or high (Range = 44 to 70), with each classification accounting for 33, 37 and 36 students respectively. A 3 (anxiety level) x 2 (test version) factorial analysis of variance was carried out on the achievement scores. Neither the trait anxiety nor the test version main effects were significant, $F(2, 100) = .71$, $p > .05$ and $F(1, 100) = 1.24$, $p > .05$ respectively. However, there was a significant disordinal interaction effect between trait anxiety and test version, $F(2, 100) = 5.78$, $p < .01$. In a series of planned orthogonal comparisons it was found that students with high anxiety had lower achievement on the humorous version of the test (Mean = 17.35, SD = 5.75) than on the non-humorous test (Mean = 22.26, SD = 3.87), $t(100) = 2.84$, $p < .01$. Furthermore, students with high anxiety (Mean = 17.35) had lower achievement than their peers with low anxiety (Mean = 23.40, SD = 4.93) on the humorous test, $t(100) = 3.29$, $p < .01$. No other mean differences were significant. The means for this interaction, expressed as percentages, are shown graphically in Figure 1.

Insert Figure 1 here

Discussion

The results of this study do not support the thesis that humor has a positive effect in evaluation by reducing tension and thereby facilitating the achievement of students who have high trait anxiety. This finding conflicts with two previous investigations of the interaction of humor and

anxiety in test performance. In particular, the results of this study stand in direct contrast with the findings of Smith et al. (1971) who utilized a measure of test anxiety with university students. The major difference between the two studies lies in the method of humor presentation. Smith et al. manipulated the content material of the test to make it humorous or nonhumorous while the authors of the present study made humor an adjunct to the test items. Perhaps the confounding of humor with legitimate test content made the humor more acceptable to anxious students in the former approach, whereas the humorous content may have been perceived as an extraneous distraction which interfered with concentration in the latter approach. Although this raises the question of whether any extraneous items (humorous or nonhumorous) may affect performance adversely, the fact remains that the inclusion of humorous items as a pedagogical device may be detrimental to students with high anxiety. Another possibility is that in the latter approach some highly anxious students may not have perceived the extra items as being humorous. This is consistent with the Hedl et al. (1978) finding that humor appreciation is significantly lower under stressful conditions for anxious students. Any anxious student who treated the extra items as legitimate test items rather than as humorous interludes would be likely to suffer from increased frustration and anxiety as a result of attempting to select the "correct" alternative. Although this sounds unlikely, anecdotal evidence in the form of student comments indicated that some students had indeed failed to recognize that jokes were present in the test, even though most students both recognized and enjoyed the humor. Finally, any disparate

results between the studies may be attributed to the different anxiety measures used. Smith et al. used a measure of situational test anxiety (Sarason, Pederson and Nyman, 1968) whereas the current results are associated with stable trait anxiety. State anxiety, more closely related to test anxiety than trait anxiety, was not a significant predictor of achievement.

In summary, this study indicates that there are complex relationships between academic performance, humor, and anxiety. This finding joins a number of recent findings which challenge the popular assumption that humor necessarily facilitates educational performance.

Reference Note

1. Hedl, J. J., Hedl, J. L. and Weaver, D. B. Test anxiety and humor appreciation. Paper presented at the meeting of the American Educational Research Association, Toronto, March 1978.

References

Ball, S., & Bogatz, G. A. Summative research of Sesame Street: Implications for the study of pre-school-aged children. Princeton, New Jersey: Educational Testing Service, 1971

Brophy, J. Child development and socialization. Chicago: Science Research Associates, Inc., 1977.

Cattell, R. B., and Scheier, I. H. Handbook for the IPAT Anxiety Scale (Second Edition). Champaign, Illinois: Institute for Personality and Ability Testing, 1963.

Davis, G. A. Research and development in training creative thinking. In J. R. Levin and V. L. Allen (Eds.), Cognitive Learning in Children. New York: Academic Press, 1976.

Earls, P. L. Humorizing learning. Elementary English, 1972, 49, 107-108.

Freud, S. Humor, International Journal of Psychoanalysis, 1928, 9, 1-6.

Goldstein, J. H. and McGhee, P. E. (Eds.), The psychology of humor. New York: Academic Press, 1972.

Goldstein, J. G., Suls, J. M. and Anthony, S. Enjoyment of specific types of humor content: Motivation or salience? In J. H. Goldstein and P. E. McGhee (eds.), The psychology of humor. New York: Academic Press, 1972.

Hauck, W. E., and Thomas, J. W. The relationship of humor to intelligence, creativity, and intentional and incidental learning. Journal of Experimental Education, 1972, 40, 52-55.

Hill, K. T. Anxiety in the evaluative context. In W. W. Hartup (Ed.), The young child, (Vol. 2). Washington: National Association for the Education of Young Children, 1972.

Hill, K. and Sarason, S. B. The relation of test anxiety and defensiveness to test and school performance over the elementary-school years. Monographs of the Society for Research in Child Development, 1966, 31, 1-76.

Keith-Spiegel, P. Early conceptions of humor: Varieties and issues. In J. H. Goldstein and P. E. McGhee (Eds.), The psychology of humor. New York: Academic Press, 1972.

King, F. J., Heinrich, D. L., Stephenson, R. S., and Spielberger, C. D. An investigation of the causal influence of trait and state anxiety on academic achievement. Journal of Educational Psychology, 1976, 68, 330-334.

Le Francois, G. R. Of Children: An introduction to child development. Belmont, California: Wadsworth Publishing Company, 1973.

Levine, J., and Abelson, R. Humor as a disturbing stimulus. Journal of General Psychology, 1959, 60, 191-200.

Sarason, I. G., Pederson, A. and Nyman, B. Test anxiety and the observation of models. Journal of Personality, 1968, 36, 493-511.

Smith, R. E., Ascough, J. C., Ettinger, R. F., and Nelson, D. A. Humor, anxiety, and test performance. Journal of Personality and Social Psychology, 1971, 19, 243-246.

Spencer, H. The physiology of laughter. Macmillan's Magazine, 1860, 1, 395-402.

Spielberger, C. D., Gorsuch, R. L., and Lushene, R. E. Manual for the State-Trait Anxiety Inventory. Palo Alto, California: Consulting Psychologists Press, 1970.

Taylor, J. A. A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 1953, 48, 285-290.

Terry, R. L., and Woods, M. E. Effects of humor on the test performance of elementary school children. Psychology in the Schools, 1975, 12, 182-185.

Ziv, A. Facilitating effects of humor on creativity. Journal of Educational Psychology, 1976, 68, 318-322.

Footnote

The authors wish to acknowledge the cooperation and tolerance of students at the Junior College of Albany who participated in this study.

Table 1

Trait and State Anxiety Means and Standard Deviations as a Function of Sex and Course

	Males			Females		
Anxiety	Mean	SD	n	Mean	SD	n
Trait Anxiety						
Child Development	37.55	7.41	11	42.49	8.80	39
Introductory Psychology	37.12	8.29	17	40.95	7.73	39
State Anxiety						
Child Development	39.36	11.77	11	50.23	10.60	39
Introductory Psychology	42.35	8.93	17	44.64	9.11	39

Table 2

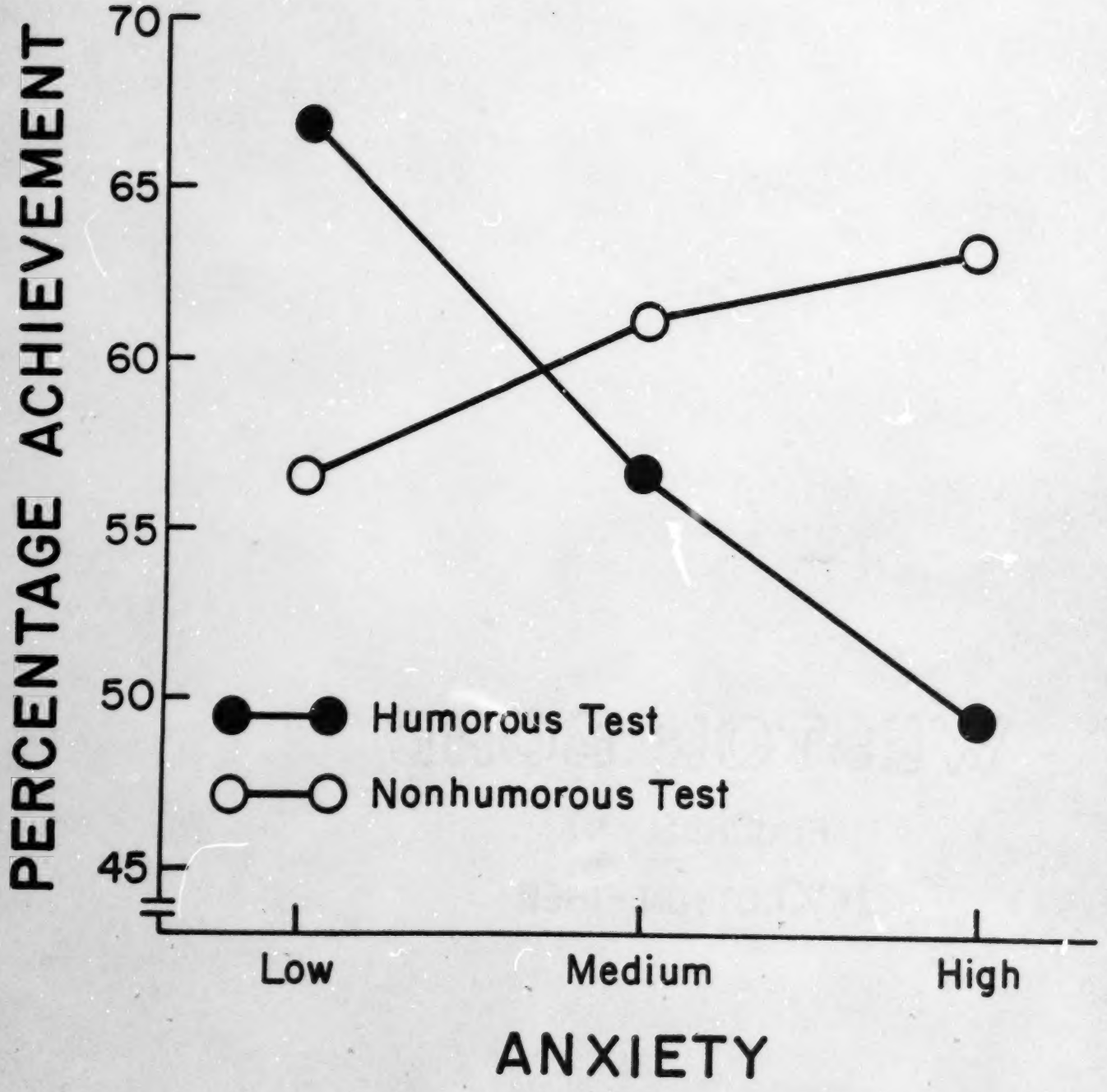
Summary of Multiple Regression Analysis of Achievement

Predictor Variable	R^2	F	df	Simple r
Trait Anxiety		8.70**	1/100	-.18
Test Version		8.23**	1/100	.11
State Anxiety		.45	1/100	-.06
Test Version x Trait Anxiety		6.10*	1/100	.04
Test Version x State Anxiety		.55	1/100	.08
Full Model	.132	3.04*	5/100	

**$p < .01$
*$p < .05$

Figure Caption

Figure 1. Achievement test performance as a function of type of test and level of trait anxiety.


PERCENTAGE ACHIEVEMENT
70
65
60
55
50
45
Humorous Test
Nonhumorous Test
Low
Medium
High
ANXIETY